

S. H. Alden

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CONTENTS.

	PAGE
On Draining, by H. H.	441
Florida, its Climate, Soil, Productions, &c. by Verum.....	444
Sea-Island Cotton in Florida, by W.....	449
A Discourse, Pronounced before the Greenville Agricultural Society, at its annual meeting on the 19th Oct. 1844, by the Hon. J. R. Poinsett,.....	452
Oranges.....	460
Insects injurious to the Farmer and Gardener, a series of Essays, by Willis Gaylord. (Continued).....	461
Improvement in South-Carolina, extract from an Address delivered by Judge J. B. O Neall, before the South-Carolina State Agricultural Society.....	469
New System of Manuring.....	ibid
Coal Tar and Lime as Manure.....	470
Night Soil.....	ibid.
Materials for Composts.....	ibid.
Green Manures.....	471
Beautiful experiment with a Plant.....	ibid.
Paper from Malticaulis.....	ibid.
Diseased Potatoes.....	ibid.
Pruning.....	472
Quantity of live Stock Imported.....	ibid.
The Fall Season.....	ibid.
Title and Index for Vol. IV.	

SEABROOK ON THE COTTON PLANT.

A MEMOIR on the Origin, Cultivation and uses of Cotton, from the earliest ages to the present time, with especial reference to the Sea-Island Cotton Plant, including the Improvements in its Cultivation, and the preparation of the Wool, &c. in Georgia and South-Carolina; read before the Agricultural Society of St. John's, Colleton, November 13th, 1843, and the State Agricultural Society of South-Carolina, December 6th, 1843, and by both Societies ordered to be published. By Whitemarsh B. Seabrook, President of the State Agricultural Society of South-Caroline, price 25 cents. For sale by
March 1 A. E. MILLER.

 The subscribers to the Southern Agriculturist are reminded, that the Price of the Journal was reduced last year to all those who paid in advance; those who are still in arrears for this and former years are respectfully solicited to make their payments.

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THE SOUTHERN AGRICULTURIST.

(NEW SERIES.)

Vol. IV.

FOR DECEMBER, 1844.

No. 12.

For the Southern Agriculturist.

ON DRAINING.

MANY of our planters by their practice, shew how necessary they regard ditches upon their plantations. But while they are digging, why not dig for permanent and useful results? How many ditches are hurriedly made in *the urgency* of the moment, without any outlet to them, and from which the water only disappears by the slow and unwholesome process of evaporation and absorption. Now this careless practice on the part of many of our planters, taken in connection with *other stagnant surfaces* to be found in the low spots and depressions of our plantations, are fruitful and extensive sources of disease, alike destructive to health and prosperity.

To this unhealthiness of our low country, with other causes consequent therefrom, we in a *great measure* owe the scantiness of our population, and the loss of so many of our enterprising citizens by emigration to the West. The temptation to abandon our worn-out fields for the rich and virgin soil of the new States, is undoubtedly very great, but "to the skillful and intelligent planter, who applies every available means to the successful prosecution of his art, the promise even in our age and country is sure 'that seed time and harvest shall never fail.'"

Ditches when properly located, repay the labor expended upon them, but not otherwise. When, from being badly graded, they hold water for any length of time, they not only defeat the ends aimed at, but become the receptacles of stagnant water, generating noxious exhalations, to the injury of ourselves as well as of *our*

neighbors. In draining them, we should keep two objects steadily in view, the improvement of our lands, and the improvement of health.

For the accomplishment of these, our ditches should be so arranged, as to carry off rapidly all surplus water from the surface of the ground, and also underneath it, beyond the reach of the roots of the growing crop.

In our hot climate, water which has no means of escape, soon becomes stagnant, both under ground and upon its surface, and when in either case, it is found about the roots of a plant, vegetable life is destroyed, without our suspecting the true cause.

All planters know that when land is too moist, and consequently cold,* it does not compensate him for his labor, nor is it benefited by the manure he may be at the trouble of collecting and incorporating with it.

Moreover, land that is too moist, is unfit for early planting, and in the absence of sufficient warmth, prevents the crop from maturing in due time, thus rendering it more liable to injury from storms, early frosts and other accidents of the season.

"Where too much water is present in the soil, that food of the plant which the soil supplies is so much diluted, that either a much greater quantity of the fluid must be taken in by the roots, much more work done, or the plant will be scantily nourished. The presence of so much water in the stem or leaf, keeps down the temperature likewise, when the sunshine appears; an increased evaporation takes place from the surfaces, a lower natural heat in consequence prevails in the interior of the plant, and the chemical changes on which its growth depends, proceeds less rapidly."

"When drenched with water, the vegetable matter in the soil, either decomposes very slowly, or produces acid compounds, more or less unwholesome to the plant."

Scotland has the most perfect system of agriculture in the world, and "draining, partial as it has been, has made it what it is."

It may be said, as an excuse for not having ditches, that it costs too much labor. "But does it not cost a great deal more to be

* "In wet soils the temperature rises more slowly, and never attains the same height as in a dry soil by 10 or 15 degrees. Hence it is strictly correct to say, that wet soils are cold." *Johnston's Elements of Agricultural Chemistry*, p. 117.

without them?" None need urge this inability from the want of *means* to undertake the operation of draining, since its effects are immediate and encouraging. Each can do *a little* to begin with, and every year thereafter, the ditching however small, will increase the means proportionately to extend similar operations in future. Another excuse is *want of time*. Let the planter plant less land to the hand, and he will find he has plenty of time for digging ditches, and that his crops will also be more abundant. Indeed, so beneficial would a good system of draining prove to all of us, that it should be our study to prevent any misapplication of our force from so profitable a pursuit. Instances among others, of this misapplication of labor, may be observed in those low spots of our fields, which have been cleared of their natural growth of timber, for purposes of cultivation, and often with no other view than neatness of appearance. To drain or level many of these spots *effectually*, could only be accomplished at a cost, which nothing that we could raise upon them, would *compensate us for the outlay*. Until our property becomes valuable enough to justify this expenditure, it will be more conducive to our interests and the *general health of the community*, to let them remain covered with their native foliage, as a protection against the unwholesome influences of our summer heat. On the other hand, some of our low wet lands are among our most fertile and durable soils, abounding in rich vegetable matter, and would well repay any efforts bestowed in reclaiming them, from the state of unproductiveness in which they have been for so long a time. And now that so much of our high, light soil has been exhausted by too heavy cropping, it becomes peculiarly incumbent upon us, to make immediate exertions for the development of our long neglected resources.

In our rich low country region, there are many causes which promote fever; the proper remedy against which, is alone to be found in an *improved cultivation* based upon an efficient system of drainage: we are told "that the climate of Egypt, when it was formerly well cultivated, was more healthy than that of Rome in its decline." But I prefer quoting facts from our own times, rather than to rely upon illustrations drawn from the more doubtful records of the past.

Dr. Wilson in an instructive article published in the *Quarterly Journal of Agriculture*,* on the comparative state of the health of the laboring population in the district of Kelso, Scotland, during the last two periods of ten years, says, "that fever and ague, which formed nearly one half of all the diseases of the population during the *former ten years*, have almost wholly disappeared during the *latter ten*, in consequence of the general extension of an efficient drainage throughout the country; while at the same time, the fatality of disease, or the comparative number of deaths from every hundred cases of serious ailment, has diminished in the proportion of 4.6 to 2.59. Such beneficial results, though not immediately sought for by the practical farmer, yet are the inevitable consequence of his successful exertions. Apart, therefore, from mere considerations of pecuniary profit, a desire to promote the general comfort and happiness of the entire inhabitants of a district, may fairly influence the possessors of land to promote this method of ameliorating the soil; while the whole people, on the other hand, of whatever class, ought gratefully to acknowledge the value of those improvements, which at once render our homes more salubrious, and our fields more fruitful."

H. H.

From the Charleston Courier.

FLORIDA, ITS CLIMATE, SOIL, PRODUCTIONS, &c.

Fort Moultrie, S. C. Sept. 13.

Messrs. Editors,—I enclose you the second† article from "*Verum*," on Florida, its climate, soil and productions. From a careful perusal of this article, and a long and intimate acquaintance with the country, I am enabled to vouch fully for the facts therein set forth.

The climate of East Florida will be considered in this place, only in so far as relates to the vegetable productions. In this respect, it has been spoken of in extravagant terms, from which it might be supposed that every kind of vegetable growth, indigenous to all regions between Hudson's Bay and Cape Horn, flourish alike, side by side, spontaneously. But the climate has been praised, in

* Vol. XII, p. 317.

† The first was not sent us, we however publish it—as we wish to insert the reply which follows, from the same paper.

an especial manner, as proper for all the tropical staples and fruits. A Mr. Carver is quoted by one writer, as saying, "So mild is the winter that the most delicate vegetables and plants of the Carribee islands experience not the least injury from that season;" and a Mr. William Stock is made to say, "This country will produce all the tropical plants and staples by the side of those belonging to a northern climate." It is proposed to notice the winter climate of East-Florida.

In the year 1765, John Bartram states, that "on the 3d of January, being on the St. John's river, north of Lake George, the thermometer was at 26° wind N. W., the ground was frozen an inch thick on the banks; this was the fatal night that destroyed the lime, citron and banana trees in St. Augustine." Williams says, "In 1774, there was a snow storm, which extended over most of the territory. In February, 1822, the cold was so intense in West Florida, that all the fruit trees were killed to the ground, but this season was comparatively mild in East Florida. On the contrary, East-Florida suffered exceedingly from a violent frost on the 6th of April, 1828, on this bitter night, crops of cotton, corn and fruits were all destroyed. The thermometer at Six Mile Creek, on the St. John's, stood at 27° , and the ice made an inch thick. The crops of corn and cotton were cut off as far south as Tomoko,—During the month of February 1835, East Florida was visited by a frost, much more severe than any before experienced. A severe northwest wind blew ten days in succession, but more violent for about three days; during this period the mercury sank seven degrees below zero. The St. John's river was frozen several rods from the shore, and all kinds of fruit trees were killed to the ground; many of them never started again, even from the roots. Frost is felt at some seasons in every part of Florida, though not usually below latitude 27° " Vignoles says, "the nipping of the white frost is occasionally felt so far as the extreme capes of Florida, though not an annual visitant." Below the lowest degrees, in the years mentioned, at several points on the peninsula, are given. In the years omitted, no observations have been published.

St. Augustine, lat. $29^{\circ} 50'$; 1826, 33° ; 1828, 30° ; 1830, 30° ; 1841, 24° . Palatka, lat. $29^{\circ} 38'$; 1840, 28° ; 1841, 27° . Fort King, lat. $29^{\circ} 12'$; 1841, 22° . Farry gives the annual range of the thermometer at Fort King, as follows: max. 105° , min. 27° , range 78° . Tampa, lat. $27^{\circ} 48'$; 1826, 28° ; 1827, 26° ; 1828, 40° ; 1829, 28° ; 1830, 30° ; 1840, 35° ; 1841, 30° . Sarasota, lat. $27^{\circ} 20'$; February, 1841, 30° .

From the above, it is evident that the coast of Florida has a much milder climate than the interior; for Fort King, which is more than half a degree south of St. Augustine, has nevertheless a much more severe climate, as will be still further shown. In February, 1841, the frost was so severe on Pease Creek, in lat. 28° , for several nights in succession, that thick ice was formed, and the

horses' hoofs clattered on the frozen ground as loudly as at the North in the severe cold of November. No observations were made with the thermometer. This frost must have extended several miles lower, or at least to lat. 27° , as it is seen that on the western coast, (in a milder climate,) at Sarasota, (lat. $27^{\circ} 20'$) the thermometer was down to 30° . The Atlantic coast has also a much milder winter climate than the Gulf coast, as is evident from the following table, which shows the mean annual range of temperature at the permanent military stations in East Florida:—

	Max.	Min.	Range.
St. Augustine, (Atlantic) lat. $29^{\circ} 50'$,	92°	39°	53°
Fort King, (interior) lat. $29^{\circ} 12'$,	105	27	78
Tampa, (Gulf) lat. $27^{\circ} 48'$,	92	35	57

It appears, then, that the winter climate of the coast on the Gulf, is more severe than that of the Atlantic coast, and that of the interior is more severe than either. The Eastern coast is warmer in winter than the interior, in consequence, no doubt, of the Gulf stream passing northward through the straits of Florida. But whatever the cause, it is certain that the cold of the interior is much more severe than on the coast, and that the winter weather is colder on the western than on the eastern side of the peninsula. Scarcely a year passes at Tampa Bay without ice, and the bodies of the orange trees are all seared from the effects of the cold winds. I trust it has been made apparent that tropical fruits and staples will not flourish above lat. 27° , notwithstanding the stories of Mr. Carver, and the reports floating up and down in the writings of travellers and speculators; and Williams makes the parallel of 27° the limit for tropical productions.

It is only below the 27th degree of latitude, (constituting South Florida—"Tropical" is a misnomer designed to mislead, for no part of the Territory is within the Tropics) if at all, that the tropical fruits can be raised in any degree of perfection. But a small part of South Florida is *entirely* exempt from frosts, except it be the southernmost islands and points, which are, with very little exception, both dry and barren. The guava, plantain, banana, lemon, lime, citron, date, mangoe, cocoa, &c., can be raised in South Florida, and perhaps the pine-apple and some other West India fruits. But nearly the whole of South Florida is occupied by the Everglades. "South of latitude 28° ," says a recent writer, "Florida consists of a vast morass, called the Everglades." "That part of the peninsula of East Florida," says Williams, "that lies south of the 28th degree of latitude, declines towards the centre in form of a dish, the border of which is raised towards the coast. This vast basin is filled with marshes, wet savannas, intersected by extensive lakes and lagoons, forming a labyrinth, which, taken together, is called the Everglades." Behind Cape Florida it approaches within twelve miles of the coast, it then passes round to

near Cape Sable, and up the western coast. All this country, (not including the eastern coast of the peninsula,) containing the district allotted to the Indians, has been officially pronounced by Gen. Worth as of no value; and the only part of the narrow belt of land surrounding the Everglades, which is of the least consequence is that on the Eastern coast. On the narrow strip surrounding the Everglades, allowing, for the present, that the Southern and Western portions of it are of some value, must be raised all the tropical productions of Florida. It can be seen by a glance at the map, that the quantity of cultivatable land below the limit of black frost is small indeed. It is said that the Everglades can be drained. It matters not; for if they are, they will be as worthless as before, on account of their insalubrity.

Some space will now be devoted to the general productions of East Florida.

Sugar, where the quality of the land will allow of its cultivation, is undoubtedly the most certain crop among the staples. Florida is superior to Louisiana for the sugar cultivation in this respect—the season is longer, which allows the cane to ripen higher before the occurrence of frost. Vignoles says: "It is perhaps the fact that the exhausting vegetation of this article may not allow a profitable planting of it upon the same lands more than two or three years in succession; yet as it may be raised on the pine-lands, a change of fields is easy, and attended with but little comparative trouble; and by suffering the lands to lie fallow, or by a judicious succession of crops, it will not require a very extensive tract to establish a sugar plantation. Perhaps it may be thought that Florida presents but little to tempt the large sugar planter: granted, but it is undoubted that if the culture of the cane should be adopted on a small scale, the labor would be amply repaid." The rich swamps and hammocks, after having been properly prepared, will doubtless raise sugar crops in succession, but the pine-lands will soon become exhausted and worthless, unless highly manured. The plantations of Generals Clinch and M'Intosh, near Fort Drane, which were never considered of inferior soil compared with Florida land in general, were exhausted at the time they were abandoned. Williams says: "All our *good lands* produce sugar cane as well as any other crop, and it is more certain and more valuable, in most places. Besides, there can be no danger of glutting the market with sugar." But he is in great error when he says that cane is cultivated with more ease than corn, because it does not require so much hoeing.

Cotton.—So many errors have been propagated in relation to the culture of this article, especially the Sea-island variety, that a more extended notice will be taken of it than would otherwise be necessary. Several months since, a writer in the *National Intelligencer*, with the signature of "A Physician," made use of the following language: "It is now established beyond a doubt, that the Sea-

Island or long staple cotton, (the production of which has heretofore been confined to a few small islands in South-Carolina and Georgia) will grow luxuriantly even in the very centre of the peninsula. A superior quality of this article has been produced on the Suwannee, and in the very centre of Alachua, as well as on the Eastern coast. This important fact is no doubt attributable to the almost *irregular* position of East Florida. The importance which the production of this valuable staple must give to East Florida will be duly estimated when it is considered that it can be cultivated there without the fear of *competition*. The few islands in South-Carolina and Georgia, which yield this staple, are now so nearly worn out, that their average product per acre does not exceed one hundred and fifty pounds, and there is no other portion of the United States, with the exception of East-Florida, where it *can* be produced. Neither can it be produced in Texas, in Egypt, nor in India; and it is more than probable that there is in no part of the world a country of much extent so well adapted, both in climate and soil, to the production of this staple as East Florida. It is a fortunate circumstance, too, that the Northern portion of East Florida, which is the least adapted to the production of tropical staples, is better suited than any other part of the Territory to the cultivation of Sea-Island Cotton." He says, in another place: "If we cultivate an acre of *second rate prime land* in Sea Island Cotton, (a staple which grows every where in East Florida,) the average product will be three hundred pounds, which, at the average price of twenty five cents, will amount to seventy-five dollars, which exceeds the yield of South-Carolina in this its most valuable staple."

I deny that Sea Island Cotton can be raised in the interior of East Florida at all. Now for my authority. Williams, the Eulogist of Florida, whose testimony is therefore the more valuable for my purpose, says: "Sea Island Cotton is peculiarly adapted to our sea coast and island, and although good crops may sometimes be made at some distance in the country, yet they are uncertain, and always degenerate in proportion to their distance from the sea. Our islands and coast are made up of the debris of sea shells, a small portion of clay and vegetable matter, with a large portion of silicious sand. The larger the proportion of vegetable matter and clay, the larger is usually the crop of cotton, but the less of these matters contained in the soil the finer and more glossy will be the staple of the cotton, and no kind of manure has been found that will increase the quantity, without, at the same time, injuring the quality of the cotton, except it be sea-weeds, or marsh mud." * * *

* * * "The best planters do not average more than three acres of cotton to the hand. The best lands will produce, in good seasons, one bale to the hand, but in general half that quantity can be depended on. The value of this crop depends, more than any other, on the manner in which it is handled and put up for market."

The crop is liable to many accidents. The caterpillar sometimes destroys whole fields in one night. The red bug pierces the pod and discolors the cotton, and heavy winds destroy the pods; besides, it is a tedious crop to clear and prepare for market. It ought never to be cultivated on lands that will produce sugar or tobacco, but to be confined to light hammock lands within the range of the sea breezes. The Mexican, a green-seed cotton, is still cultivated in the country. High oak land is the only kind which produces this crop to advantage, and at the price now given, it does not, in Florida, pay the expense of cultivation.

Sea Island cotton can perhaps be cultivated on a few of the Florida Islands, and on a narrow strip of land on the Eastern coast, about Indian River. This remains to be determined. It cannot be raised in the other parts of the Territory, and least of all in the Northern portions of East Florida, which is the least adapted to the production of Florida staples. It cannot be raised in the very centre of the Peninsular. In the cotton market, Florida and Upland cottons are always classed alike, and as bringing about the same price. I do not believe that the "*second rate pine lands*" will produce "an average of three hundred pounds" of any kind of cotton "per acre." Williams says that "the best land will produce, in good seasons, one bale to the hand, but in general, one half that quantity can be depended upon," and that "the best planters do not average more than three acres to the hand." From the "best land," then, in "good seasons," according to Williams, one acre will produce 150 pounds, (allowing the bale to contain 450 pounds,) which, at 9 cents per lb. (a high price,) amounts to \$13 50. Allowing 600 pounds to the bale, the product of one acre (200 pounds) is \$18. Even if we allow the whole three hundred pounds per acre, the product will amount to only \$27, and at 8 cts. (a fair price, a great one though) to only \$24, instead of \$75, as set forth by "A Physician." Any one may see by the price current for the last two or three years, that Florida Cottons have brought only $7\frac{1}{2}$ and 8 cents. So much for Florida Sea Island Cotton, which cannot be raised in the interior, and on but a small portion of the coast, if at all.

VERUM.

From the Charleston Courier.

SEA ISLAND COTTON IN FLORIDA.

The Courier of the 27th Sept. contained an article under the signature of "Verum." on "Florida, its climate, soil and productions," which was communicated and avouched by some one at "Fort Moultrie, S. C.," who professed to have "a long and intimate acquaintance with the country." As "Verum" and his indorser seemed to be very anxious to "correct errors," especially in relation to the culture of Sea Island Cotton in Florida, your

readers had a right to expect accuracy in their facts, and candour in their statements and inferences. If the communication is suffered to pass without notice, it will be taken as correct, and thereby greatly mislead many who may feel a deep interest to learn the truth in this matter.

"Verum" says that "Sea Island Cotton can perhaps be cultivated on a few of the Florida Islands, and on a narrow strip of land about Indian River; but this remains to be determined."—And adds that it "cannot be raised in other parts of the territory, and least of all, in the Northern portions of East Florida." These are broad assertions, yet in the face of them I make the following statement of facts; and, if needs be, they can be substantiated beyond all controversy.

In Hamilton and Columbia counties, up to the Georgia line, the planters raise Sea Island Cotton almost exclusively, and have done so for eight or ten years at least. I cannot give you the product per acre or per hand, but these planters are intelligent gentlemen, and cultivate lands that would yield 800 or 1000 lbs. of Uplands, in the seed, per acre, and of easy cultivation. I suppose, therefore, they know their own interest better than to persevere for years in raising "what cannot be raised in the Northern portions of East Florida." Whether their Sea Island Cotton is now worth only "8 or 9 cents," I must refer "Fort Moultrie" to Messrs. J. Fraser & Co., and J. Gadsden & Nephew, who (I trust will pardon this unauthorised reference to them, as they) probably can give him more accurate information than his correspondent "Verum." In March, 1836, I sailed from Jacksonville, E. F., to Charleston, and carried with me a few bags of Sea Island Cotton, raised in Columbia county, bought to save exchange, which were readily sold on the wharf at 35 cents, when Uplands, I think, were worth about 15 or 16.

In 1839, I made a small experiment in Sea Island Cotton, in Leon County, 35 miles from the sea board. I planted six acres late in April, that yielded 1,098 lbs. clean Cotton, which was saw-ginned and sold for 20 cents, when Uplands were selling at 10 cents.

In 1840, I planted more largely, but again too late in the spring. Both Sea Islands and Uplands were almost an entire failure, as the season was backward and our crops were cut off by caterpillar in August.

Nevertheless, in 1841, I put 30 acres in Sea Island Cotton. It was again injured by caterpillar, but yielded 3,660 lbs. of white Cotton and 500 lbs. stained, which was roller ginned, and sold in Liverpool for 11½d.

In 1842, I procured a few seed from South-Carolina, of a productive variety, known there as the "King Cotton," which yielded more than 1,000 lbs. in the seed per acre from 10 acres. That year I planted 60 acres of Sea Island Cotton, which turned out

9,067 lbs., and sold in Liverpool for 10½d., unfortunately a little before the rise in that market. The selection of ground that year was a bad one, as two-thirds of the crop was much injured by rust, but not more so than Upland Cotton on the same kind of ground.

Last year I planted 200 acres in Sea Island Cotton. The spring was late and crop backward, and our fields were swept by caterpillar by the 15th of September, besides the damage we sustained from a severe storm. But for these disasters, in the opinion of competent judges, the prospect was fair for a crop of 35 to 45,000 lbs. of clean Cotton. I made but 14,422 lbs., and again shipped to Liverpool and sold at 13d. and 14d.

This year I have ventured an entire crop of Sea Island, 250 acres, which is about 8 acres to the hand. It was planted early and the cut-worm was troublesome, so that I secured but an indifferent stand. The season otherwise was favorable, and Cotton matured very early. But our enemy, the caterpillar, appeared also very early, and ninety or one hundred acres of the very best of the Cotton was entirely stripped of the leaf by the 23d of August, and at least fifty acres of the balance again took the rust, and will not yield more than 150 or 160 lbs. of seed cotton per acre. The caterpillars finished their work of destruction by the 15th of September. Yet there are already picked (16th October) 75,000 lbs. in the seed, which will give 22,000 of clean cotton, and there is probably half as much more to be housed. Had the caterpillar spared it, this crop would undoubtedly have turned out from 45,000 to 50,000 lbs. of clean cotton.

I have given these results of my own experiments, because they are probably amongst the least favorable that our country affords. I had no practical knowledge of the culture of Sea Island Cotton, or preparation of it for market, my hands were totally unaccustomed to its culture, and without an overseer of experience to direct them. And lest "Verum" or his friend may suppose that mine has been an effort to raise cotton at the expense of every other crop, they are informed that last year the same force raised over 3000 bushels of corn, besides cultivating eight or ten acres of sweet potatoes, and making ten barrels of sugar, 500 gallons of syrup, several hundred bushels of turnips, 11,557 lbs. of good fat pork, and 120 lambs for market. The present year's crop of corn will exceed 3,500 bushels, with larger and likelier cane and potato patches, and I trust quite as good a hog-pen as last year's.

In the Charleston market, our black seed cotton ranks in quality with good Santees, and the impression here is general that this quality will be our most profitable crop; not that any proper trials have been made, but principally because our lands nearer the Gulf are pine barrens or open prairie, too low and wet for Cotton, while we are told that a certain proximity to the salts is necessary to produce the finer varieties of Sea Island Cotton. There are a few planters in Middle Florida, from the low country of Georgia

30/3660/120
20
60
80

and South-Carolina, who have cultivated Sea Island Cotton for ten or twelve years, and have no idea of abandoning it. And many others, owing to the very low price of Uplands, are about to try the Sea Islands, notwithstanding their reluctance to encounter the trouble and risk of a new crop.

Sea Island Cotton has been successfully raised in Jackson, Gadsden, Leon, Jefferson, Madison, Hamilton, Columbia, and Duval counties, embracing the Northern part of East Florida, the whole of the Middle District, and one county at least in West Florida, and for ten to fourteen years past. Any intelligent gentleman resident in either of these counties, will take pleasure in communicating correct information on the subject to any reader of the *Courier* that desires it; and I am utterly at a loss to account for the broad assertions of "Verum," made directly in the face of the real facts of the case. If he and his "Fort Moultrie" friend had no intention to mislead the public, and do Florida great injustice, they certainly have betrayed most culpable ignorance on a subject where they professed such intimate acquaintance. W.

Leon County, Fla., Oct. 16, 1844.

From the Greenville Mountaineer.

A DISCOURSE,

Pronounced before the Greenville Agricultural Society, at its annual meeting on the 19th Oct. 1844, by the Hon. J. R. POINSETT, and published at the request of the Society

Fellow-Citizens and Brother Farmers:

I do not appear before you this morning for the purpose of making what is usually called an Agricultural address. I have lived long enough among you to be satisfied, that you require no exhortations to stimulate your exertions or excite your industry. I am aware that you are already industrious, frugal and painstaking in your calling. What you need is some instruction as to the best means of applying your labor; the object of my discourse, therefore, will be directed to impart, in a concise form, the different systems of Agriculture practised in those countries where the lands are made to yield the most abundant produce for the sustenance of man, and to recommend for your adoption such modifications of these systems as our soil and climate would seem to require. The countries to which I shall direct your attention, are the Netherlands, England and Italy.

The first is the greatest example the world affords of the wonder-working effects of persevering and systematic industry. The natural soil of Flanders is very poor and thin, and where unreclaimed, is covered with a growth of heath: but where the hand of the judicious and laborious Farmer has been at work, this barren

waste is converted into fertile and highly productive fields. The manner in which this has been effected is simple and uniform.— In the first place, the Flemish Farmer never attempts to cultivate more land than he has manure for ; and the chief objects of all his operations appear to be the increase of those crops which afford sustenance for cattle, and the careful preservation of every substance which can be converted into manure.

Clover is the foundation upon which the Agriculture of Belgium rests. It is sown to every sort of grain in the spring of the year, at the rate of about ten pounds of seed to the acre, when the blades of the wheat, rye or barley are three or four inches high. It is sown at the same time with oats. The year after, the clover yields two good crops, and if suffered to stand another year, will give one still more abundant, and good pasturage until ploughed up for wheat, which usually follows it. The original strength of the plants, which yield so abundantly, is undoubtedly owing to the care taken in pulverizing the soil by frequent ploughings and harrowings, the careful extirpation of all weeds, and the copious supply of manure ; but the successive harvests which these plants afford, are attributable to the top dressings which are bestowed upon them. These consist of rotten dung, lime or ashes, laid on as soon as the plants begin to extend themselves over the ground, and frequent sprinklings of liquid manure, which is preserved in tanks to be found in every farm-yard. But what is considered preferable to all these, are the turf ashes of Holland, which is sown by the hand, on clover, in quantities varying from eighteen to twenty bushels to the acre. This small quantity produces a surprising effect. Within a few weeks after it is sown, a field, where only a few slight straggling plants were to be seen, becomes covered with a most abundant herbage. The turf ashes of Holland, upon a careful analysis by Mr. Brande, Secretary of the Royal Society of London, were found to contain

Silicious earth,	- - - - -	32 parts.
Sulphate of lime, -	- - - - -	12 "
Sulphate and Muriate of Soda, -	- - - - -	6 "
Carbonate of lime, -	- - - - -	40 "
Oxide of Iron, -	- - - - -	3 "
		<hr/>
		93 "
Impurities and loss, -	- - - - -	7 "
		<hr/>
		100 "

By keeping a large portion of the farm in pasture, by manuring clover highly and ploughing it under, and by frequent changes of crops and of seeds, the poor soil of Flanders is made to produce a greater quantity of sustenance for its inhabitants, a larger surplus of food for exportation, and more valuable commodities to exchange for articles of foreign growth, than that of any other coun-

try. Besides wheat, rye, barley, oats, peas, beans and buck-wheat; madder, rape seed, hops, tobacco, clover seed, mustard seed, flax, hemp, poppy oil, and some other productions, are raised for home consumption and exportation. In England, clover is likewise regarded as the best means of improving land and preparing it for wheat. As this is the country where science has contributed most in aid of agriculture, I will briefly state the general rules which have been laid down by the ablest English writers on husbandry, and followed by their best farmers:

The first is, that culmiferous crops ripening their seeds should not be repeated on the same land without the intervention of pulse, roots, herbage or fallow. By culmiferous plants are meant such as have smooth-jointed stalks, like wheat and rye. The order in which different plants enter into the rotation, or succeed each other, is not of so much importance. Most commonly beans, peas or clover are interposed between grain crops on clay soils; and turnips, potatoes and clover on dry loams and sandy land, technically called in England, turnip soils. This order of rotation of crops is called the system of *alternate husbandry*: one half of the farm being in this course under some species of grain, and the other under pulse, roots, cultivated herbage or plain fallow. This system is only practised in the neighborhood of cities, where an abundant supply of putrescent manures can be obtained. Under ordinary circumstances it has been found to exhaust the land too much, sandy soils especially being injured by it, as they soon become too incohesive under a course of constant tillage. The system designated as that of *convertible husbandry* is generally preferred. Under it, a part of the farm, not less than a third, is laid down in grass, and left to be pastured for two or three years, while the remaining two-thirds are subjected to a regular rotation of grain, pulse and roots. All the fields of a farm are treated thus in their turn, except where a portion of the land is old meadow.

The second general rule is not to repeat the same kind of crop at too short intervals. The reasons on which this rule is based are very obvious, and have been so well explained by Mr. Ruffin in his Agricultural Report, that I will not detain you by recapitulating them now.

The third general rule is to change the seed frequently. That the importance of this rule may be fully understood, I will merely state, that of two parcels of seed wheat, rye, oats or corn, as much alike as possible in quality, the one produced on a soil differing much from that on which it is to be sown, will yield a better produce than the other that grew in the same or similar soil and climate.

The most approved rotations on the clay soils in England are as follows, where the soil is thin:—

First year fallow: the land being well ploughed and harrowed, and all weeds carefully extirpated. I have thought it necessary to explain what is meant by a fallow, as I find it is generally supposed

to require the Farmer only to leave the land at rest during the season, without working it at all.

Second year. Wheat, with a mixture of clover and rye grass seeds sown over it in the spring.

Third year. Clover and rye grass.

Fourth year. Oats.

It is considered an improvement to leave the clover and rye grass division to be pastured for two or three years.

Not unfrequently the oat crop is followed the fifth year by beans drilled; or peas might be substituted here, as a preparation for wheat, which is sowed the sixth year.

On Turnip Soils.

First year. Turnips, of which at least two-thirds should be eaten by sheep, where they grow.

Second year. Wheat, barley or rye, with grass seeds.

Third year. Clover with rye grass.

Fourth year. Wheat.

As English Farmers manure very highly, and regard straw as the basis of their farm-yard dung, they recommend the crops to be cut as low as possible, as a few inches towards the root end adds very much to the weight of the straw. It is stated that every ton of straw will yield, under proper management, four tons of manure. Their practice is to cart out the dung during the winter to the fields to which it is to be applied, and there leave it built up in dung hills of a square form and two or three feet high. What is laid out in this way early in the winter is fit for turnips in June. This root requires well rotted dung, and a good deal of it.

Lime is much used in England, and when it can be obtained at reasonable cost, ought not to be neglected. It is, however, so very expensive an article in this District, that I will content myself with referring you to Mr. Ruffin's report, where the best instructions will be found for its application.

Ground bones are much used and strongly recommended in England, especially for the turnip crop. But their preparation demands too expensive machinery, even if the material could be obtained in sufficient abundance so far from the sea-coast.

I come now to the Agriculture of Italy, which is not so generally understood in this country, although from some similarity of climate, it appears to me well adapted to this region. We will take our examples from Lombardy and Piedmont as the best suited for our imitation. Monsieur Chateauvieux, whose letters from Italy furnish a good account of the rural economy and agriculture of that country, describes in the following manner, the method of cultivating a farm of sixty acres, the usual size of the farms in those countries, under the direction of one tenant.—“Fifteen of the sixty acres are in meadow; the remainder in arable lands; of the latter, ten acres are in clover. The hay from this and from the meadow feeds eight oxen, thirteen cows and

calves, two of which are young oxen, and one horse, used only to go to market and to tread out the grain." There, oxen are used for the plough, so that on this farm twenty-four head of cattle are fed, and one pair of oxen raised every year.

The general rotation of crops is as follows :

First year, Indian corn with beans, the land being well manured.

Second year, wheat with clover seed.

Third year, clover cut for hay and ploughed in for wheat.

Fourth year, wheat or rye.

This succession of crops is not only very productive, but maintains the fertility of the soil unimpaired ; a circumstance to be attributed to the abundance of manure furnished by the pasture lands, which in turn are ploughed up and enter into the rotation.

As the land is highly manured for corn the first year, the produce is very considerable. It forms the chief article of food throughout Piedmont. This harvest being over in September, the land is prepared for wheat, which is sown early in the fall and harvested the beginning of July following. The clover, which has been sown upon the wheat in the spring, flowers in September and is usually cut in October, and then be pastured. The next spring it yields an abundant crop of hay ; but the heat of the sun in that climate being too great to expect a second crop, it is turned in after the harvest as a preparation for wheat or rye. By this management the land yields every four years three crops destined for the sustenance of man, one fallow and two crops for cattle.

Where the land is let out, as is usual in this part of Italy, on shares, the tenant is held to cultivate it in the manner described. The usual terms are, half the produce to the proprietor of the soil, the tenant paying a moneyed rent for the meadow, and retaining for himself the clover crop and the increase of cattle. It is calculated that three-fourths of the produce of the land in Piedmont is sent to market, viz : the whole of the half reserved to the owner of the farm, and one-half of the tenant's share, he being able to subsist his family upon the remaining half, joined to the produce of the garden and poultry yard. The profits derived from the cattle, furnish him with the ready money he requires for his simple wants. I was myself very much struck with the flourishing condition of the farms in Lombardy and Piedmont, especially wherever the lands were so situated as to admit of their being irrigated. The product of their rice crops exceeds that of ours, owing no doubt to rice being cultivated in rotation after clover or hemp, whereas it is repeated on our lands year after year without any fallow or change of culture. I will not detain you by describing the manner of irrigating lands, or the wonderfully fertilizing effects of water when applied, not only to meadows, but to all kinds of grain.—Wherever water can be brought to overflow the land, irrigation ought to be practised, as the produce of the same soil would be much more than doubled by it.

Having recapitulated the most successful systems of Agriculture pursued in other countries, where the cultivation of the soil is confined to raising grain and grass, as it ought to be in these upper Districts, it remains only to suggest such modifications of them as our soil and climate would seem to require. Whatever system, however, that may be adopted, must be based upon the rules laid down above. Do not cultivate grain crops on the same land two years in succession. Do not repeat the same kind of crop at too short intervals. Change the seed frequently. The order of succession, as I said before, is of little consequence. Cultivate turnips in drills, and abundantly, as also sweet potatoes and peas; all of these are to be regarded as fallow crops, fitting the land to receive grain. Raise rye, the long straw of which is very useful in the preparation of dung. Manure your fields, and cultivate only that portion of land which you can manure sufficiently. I will venture to suggest a rotation of crops for four years, which it appears to me would suit our soil and climate :

In the light soils.

- First year, turnips and potatoes.
- Second year, rye and oats with clover seed.
- Third year, clover, cut once and ploughed in.
- Fourth year, wheat.

On stronger lands.

- First year, Indian corn with peas, well manured.
- Second year, rye and oats with clover seed.
- Third year, clover cut and turned in.
- Fourth year, wheat.

These rotations are founded upon the principle that as much land as can be spared shall be cultivated in green crops, and a portion of it left in pasturage, in order to afford sustenance for cattle, and thereby furnish manure for the corn and grain crops. It is vain to encourage the farmer to raise fine cattle, until he has been taught to cultivate green crops to feed them. Fine cattle fed on broom-sedge, and left to seek a scanty subsistence in the woods, will soon degenerate; whereas, the common stock of this District, if fed on turnips, potatoes, peas and clover, would improve and become an excellent race. The heat of the climate cannot be pleaded in excuse for our neglect. Lucerne will stand our sun and furnish permanent pasture. Clover will flourish and yield abundantly the first and second year; after which the best use that can be made of it is to turn it under, to prepare the land for wheat, rye or oats.

If, in addition to following this course of culture, one-third or one-fourth of the arable land be kept in some good grass, our farmers would increase the produce of their farms four fold, and improve the quality of their lands so that their children and children's children might maintain themselves upon them comfortably. In illustration of what I have said, I will mention a circumstance

which occurred lately. A farmer, who from prejudice or ignorance, pursued the old method and cultivated much more land than he could manure or tend properly, was, notwithstanding his large landed possessions, constantly behind-hand during his lifetime. On his decease, the farm became the inheritance of his three sons and was divided into three parts. Well, these young men at once adopted the system I have recommended to you. They put part of their farms in grass, and established good pastures for their cattle. They manured their arable lands with marl and lime and farm yard dung, and cultivated only that portion of it which they could manure thoroughly; they adopted a rational rotation of crops, and changed their seed frequently, so as to sow their land as often as practicable with seed matured in a different soil and climate. The result of this course has been, that each third part of the old farm now yields more produce of every description for home consumption and exportation than the whole of the land together did under their father's management; with this advantage besides, that under this treatment these farms continue in a state of progressive improvement.

I cannot close this discourse without recommending the subject of Horticulture to the especial attention of farmers. In the countries which I have cited this morning as models of judicious husbandry, a good garden is regarded as a necessary adjunct to a farm, contributing largely to the sustenance of the family, as well as to its health and comfort. A garden should be situate near the dwelling, on one side of it, if the land there be sufficiently level, and consist of not less than an acre of land. The best form is that of an oblong square, the longest sides running East and West, which will present the two longest beds in the most favorable positions; that on the South side of the fence for bringing forward early vegetables in the Spring, and that on the North for such fruits and vegetables as require shade. For this and other reasons, beds ought to be extended on every side of the garden next to the fence, with a good and sufficient walk outside of them. These, with a broad walk through the centre of the whole length of the garden, and one intersecting this at right angles from the middle of the East walk and running the whole breadth of the garden, will divide it into a sufficient number of compartments. The beds should be spaded up two feet deep and manured with well rotted dung, and all seeds should be sown and plants set out in rows. Drill husbandry, although the most productive, may be dispensed with on large farms, but in gardening it is indispensable. I will not fatigue your attention by further details, and only remark that the rules laid down for cultivating a farm apply to the garden. Do not repeat too often the same culture upon the same bed, and change the seed frequently.

Fruit trees ought not to be neglected in this climate. I am satisfied that all the varieties of fruit cultivated in the United

States will succeed here with a little care and attention. A well cultivated orchard would furnish you with apples, pears, peaches, apricots, and plums. Every intelligent farmer might and ought to learn to bud and graft, which are the best, the most expeditious, and the surest methods of obtaining good fruit. Raise good stocks, and there will be no difficulty in procuring scions from choice fruit trees now growing in the neighborhood.

I recommend to you likewise to cultivate the vine. It succeeds well here, and cuttings will yield fruit three years after being set out, if properly trimmed and manured. They suffer from neglect, but the labor they require is light. I will endeavor to give a few practical instructions for the treatment of the vine, which will enable every farmer to raise and fruit them. The soil should be dry loam or sand. The bed dug up two feet deep, and the bottom filled in with stones, small brick bats, lumps of old mortar, broken pottery, &c. The top should be rich earth, mixed with such substances as will afford the highest degree of nourishment combined with the greatest permanency. Of this description are bones, horns and hoofs of cattle, all animal matter, leather, woollen rags, feathers and hair.

To propagate by cuttings, the shoots should be cut in lengths containing two or more buds each, the uppermost buds having an inch of blank wood beyond them; the ends that are to be inserted in the ground being cut transversely just below the buds. Insert the cuttings in the earth so that the uppermost buds shall be just even with the surface of the ground. Shade them in the spring and throughout the summer, and keep the earth about them moist. For this purpose use soap-suds, which ought never to be thrown away on a farm. At the fall of the leaf, cut every plant down to the two lowermost buds.

The next operation is that of pruning the vine. This may be performed at any time after the fall of the leaf. The first rule is to cut off all shoots which bore fruit the last year, as they never bear any afterwards. Cut out such lateral shoots as appear too small to produce good fruit. Do not shorten the leading shoots which are intended to be trained up; but cut from them every other lateral bearing shoot that springs from them, and shorten those left to produce fruit to two buds. A vine in vigorous growth will always produce more fruit-bearing buds than it can bring to perfection. Therefore, do not spare the knife; and if the vine produces too abundantly, thin off the fruit for the first two or three years after it begins to bear.

If you train the vines on an arbor, let them hang under the cross pieces, in order to protect the bunches of grapes from the sun and birds. They succeed very well on trellises raised four or five feet from the ground; and I have supposed that they might be treated as they are in Italy. Monsieur de Chateauvieux, in the letters I have quoted above, remarks that "there are few things more

striking or agreeable to a traveller in that country, than to see long rows of trees, running through corn-fields, festooned with vines loaded with rich grapes. In that hot climate the shade is beneficial to the grapes and does not prevent their ripening." I have myself passed under these natural arbors, where the vines have been trained across the narrow country roads, from trees growing on either side, and can answer for the excellence of the fruit raised in this manner. If this method should be found to succeed here, it would save the expense of erecting and renewing arbors and trellises. I ought not to omit mentioning, that besides the delicious fruit furnished by the vine, the tendrils and young shoots, which ought to be trimmed off in the summer, make excellent vinegar, if thrown into a cask with water and sugar or a little molasses.

Having attempted to describe to you the most approved systems of husbandry, it only remains for me to exhort you to try that which may be most suitable for the land you cultivate. Do not be discouraged by the quality of the soil; but bear in mind that the countries which have been rendered, by the union of science and industry, the most productive in the world, are naturally even more sterile than the poor lands we cultivate. Exercise the same persevering industry and follow the same methods of culture, and there can be no reasonable doubt of your labor being crowned with equal success. Stay at home yourselves, and keep your children at home! I mean, remain in the land of your birth, at the home of your forefathers, and educate your children, that they may learn how to preserve the land they will inherit in the same prosperous condition. Improve your homesteads with durable buildings, enrich them with good gardens, embellish them with the beautiful tress and ornamental shrubs which abound in our woods, and are so highly prized every where else; surround them with permanent enclosures; shelter them with vines and fruit trees; and in the cultivation of the farms around them, observe the golden rules of husbandry. Do all these things, and your Father which is in Heaven will bless your virtuous labors with plenteousness. Do all these things, and you will daily acknowledge the wisdom and truth of the Roman Poet's exclamation, "Too happy are the tillers of the earth, if they were conscious of the blessings they possess."

ORANGES.

Four thousand of this fruit was shipped down the St. Johns, a few days since, from Drayton's Island. This fruit was the staple of East Florida previous to 1835, and some trees were known to be 150 years old, but one night in the month of February of that year, a severe frost killed them all, since which the profitable tree has been lost. A few began to bud at St. Augustine, when a small insect of the *Coccus* tribe made its appearance, and bids fair to destroy every Orange, Lime and Citron tree in the whole country.

St. Augustine News, Nov. 2d.

From the Transactions of the N. Y. State Agricultural Society.

INSECTS INJURIOUS TO THE FARMER AND GARDENER.

A SERIES OF ESSAYS, BY WILLIS GAYLORD.

(Continued from page 428.)

In the southern part of the United States, stored wheat suffers much from the attacks of the weevil, *Curculio granaria* of Linn, *Calandra granaria* of modern entomologists. This insect is well described by Wilson and by Dr. Harris. It is a slender beetle of a dark or pitch-red color, with a long slender snout, a punctured thorax, and furrowed wing-covers. It is rarely found at the north, unless in wheat brought from the middle or southern parts of the Union. Two years since we received in November a sealed envelope containing a sample of the new wheat from the Mediterranean, said to be fly proof, and forwarded by that active friend to agriculture, the Hon. Mr. Ellsworth, of Washington. As it was too late in the season to sow, I was obliged to keep it over, but on opening the package I found a number of the beetles of the wheat kind within, escaped from the kernels that had contained them. Selecting some pure flint wheat, kernels all perfectly sound, we enclosed a dozen of these weevils with this wheat in a large phial, corked so as to prevent their escape. The phial was wrapped in paper and placed where it would not be disturbed, except for examination. Opening it occasionally for more than a year and a-half, I found my weevils, with the exception of one or two, all living, and appearing to enjoy themselves much on the wheat, a large portion of the kernels of which they had hallowed out. When disturbed they simulated death very successfully, but when turned out on paper would soon be making off. How long they would have lived I cannot say, as after keeping them nearly two years, the mass in which they lived got dampened in some way, and when again examined all was moulded together.—During the time I kept them there was no increase of their numbers. The black weevil, *Calandra remota-punctata*, mentioned by Dr. Harris as found in New-York, we have never seen. If wheat had suffered to any extent from this weevil, it would doubtless have attracted more notice.

Kiln-drying the wheat effectually destroys the weevil; and from some late experiments, recorded in the Tennessee Agriculturist, it appears that if a hogshead, with one head taken out, is inverted over a fire until thoroughly heated, and then immediately filled with wheat and headed up, all weevils in the wheat will be killed, and the grain may be kept in safety until wanted for use. Keeping a granary well ventilated, cool, and frequently stirring the grain, will do much towards preserving it from insects.

There are two kinds of moths that attack grain; one, the *Tinea granella*, of European entomologists, produces two broods in a year, appearing generally in May and August. The moth or miller lays its eggs on the grain, and the grub or worm, when hatched, feeds on the grain—spinning a kind of web which envelopes several other grains, making a place of refuge. Wheat, rye, oats and barley are subject to their attacks, and where they become numerous they are a dreaded pest. The worm of this moth is a "soft naked caterpillar, with sixteen legs, and measuring four or five tenths of an inch. The color is a light ochre or buff color, with a reddish head." (Dr. Harris.) This moth we have never observed, though Dr. Harris thinks it is to be found in this country. The other grain moth, and this is not uncommon in the United States, is the Angoumois moth, *Alucita cerealella*, of Oliver.—This moth lays its eggs on the ears of wheat, rye, or barley, usually while growing in the field. When hatched, the larvæ penetrates a kernel and feeds on its contents. Within the hollow so made it undergoes its transformations, having first gnawed a hole nearly through the hull or the chaff, through which the perfect insect, or moth, easily escapes.

Three years since we received from a gentleman in Georgia, a specimen, consisting of a ear of California, or rather Egyptian wheat (it resembling the latter in the form of its head, color of the grain, &c., in every essential point.) On opening the envelope, which had been carefully secured, a number of moths showed themselves, all of which were instantly caught and destroyed. The holes through which they had made their way from the kernel through the chaff were distinctly seen, and not being quite ready to use the grain it remained in the ear, and before sowing several more moths made their appearance. The moth agreed in every respect with the description of the Angoumois moth, and we have no doubt it was the same. The ear of wheat, which contained two hundred and three kernels, was grown in Georgia from seed brought from Mexico: hence its name. More than twenty years since, we saw wheat in Western New-York, containing the larvæ of a moth, which resembled, as near as can be recollected, the moth of which we are speaking. Fortunately the seasons of the north are unfavorable to its increase; and hence, if occasionally found, it rarely does injury. At the south it is quite destructive. Kiln-drying is probably the most certain way of destroying all these enemies of grain, though, were it as easy, immersion in boiling water would be as effectual, without doubt. In some experiments made by the French savans, it was found that at a temperature of 167° of Fahrenheit, applied for 12 hours, or a temperature of 104° for 48 hours, all these grain-worms were killed. The weevil that infests the pea, does not prevent its vegetating when sown, but the grain-weevil or the grain-moths

render the grain attacked by them useless. Where grain is suspected, it should always be tested before using.

But if our northern grain crops escape to a great extent the ravages of the grain moth, they are attacked by other enemies, scarcely, if any less destructive. About the year 1828 or '29, the attention of farmers in the north of Vermont, and the adjacent districts of Canada, was called to the appearance of a small worm in the ears of the wheat, which destroyed the kernels, and in some instances were so numerous as to cause a total failure of the crop. It spread rapidly east and west, at the rate of some ten or fifteen miles a year; and at the present time is in possession of nearly the whole of the New-England States, and no inconsiderable part of New-York. It was reported that the wheat worm has this year been found as far west as Syracuse, but we have as yet had no positive evidence that such is the fact. It may be considered established as far as Onedia county. As yet, however, though occasionally seen, it does little damage in New-York, except in the river counties, above and near Albany. This grain worm, for we shall see there are more than one bearing that name, resembles so closely the larvæ of the European wheat fly, *Cecidomyia tritici*, and the patent insect is so similar, that there is little doubt of their identity. The wheat fly is in form something like a musquito, only smaller; body orange colored; legs long and slender, as usual with the goat family; and the wings transparent, changeable in color, or reflecting the colors of the rainbow. Having had frequent opportunities of examining the parent fly of our grain worm, which agrees well with the description given by Kirby and Spence, we think it the same insect—one that has been known and described in England for nearly one hundred years. It is possible, however, there may be some shades of difference, but their appearance and habits as described by Gullet and Masham, (see Dr. Harris, page 437,) are so like ours, that they may be considered the same for all purposes. These flies make their appearance in June, or at the time wheat is usually in blossom, in great numbers, and are most active in depositing their eggs immediately after dark; few being found in the daytime, or after nine o'clock in the evening. In the daytime they are secreted among the leaves and stems of the grain, rarely coming forth until after sundown. The female is provided with an ovipositor, or retractile tube, which she thrusts with her egg between the scales of the chaff, depositing them in clusters of from five to twenty. In some instances from thirty to forty larvæ have been found within the chaff of a single grain. The larvæ when first hatched are colorless, but they soon become of a deep orange, or bright rust color; are true maggots without feet, working their way with difficulty from one place to another. They gather around the central point of the chaff where the formation of the kernel commences, and com-

pletely nullify or destroy the grain. When full grown, the maggot is about one eighth of an inch in length. Some few are changed to the pupa state in the ear, but the greater part fall to the ground, where they finish their transformations, and appear in the spring or summer as perfect insects, ready to deposit their eggs on the growing wheat crop. So great and wide-spread has been the damage occasioned by this insect, that ample opportunity has been had to try all the preventives usual in such cases, and we are sorry to say with very little effect on the whole. Fumigating the fields with sulphur, or smoke from any other materials will retard their action for a time, and could they be continued might destroy them. All pungent odours are offensive to the grain fly, as they are to the mosquito, and that most offensive of all odours, the one proceeding from the skunk, has been tested, and highly recommended as a preventive. Quick lime strewed over the field while in blossom, has been highly recommended by Mr. Colman and others, but its success does not appear to be uniform, perhaps owing to its not being applied at the proper time or in sufficient quantities. A half bushel of lime mixed with the same quantity of ashes, and sown on an acre, has produced good results. In the case where lime has failed, Mr. C. has suggested that the sowing took place too early, and that two or three sowings might be advisable, so as to certainly cover the time of the fly's appearing. A friend who is an extensive farmer in Rensselaer county, N. York, assures us that the present year, wheat sown early in autumn, and which of course came forward early in the spring, has wholly escaped the grain worm, while the late sown has suffered materially; and that his experience in former years has convinced him, the same will hold good as a general rule. Where spring wheat is sown, it is found the early sown suffers the most, it being in blossom at the right time for the action of the fly. Sowing spring wheat as late as it will ripen, say the 10th or 15th of May, will save it from the worm; but such late wheat is very apt to blight, and be of inferior quality. Perhaps, where the worm prevails, giving up wheat for a short time, taken in connexion with burning stubbles and deep ploughing, would be the safe course.

There is another wheat worm which has been known for a long time in Western New-York, but did not excite much alarm until the one we have been describing made its appearance in the Eastern States and the river counties of New-York, when it became the subject of general interest and alarm among the farmers of that section of the country. This was owing to the two worms being for a long time considered the same, while they are widely different. Unlike the former grain worm, the present one would in some years be in great numbers, and the next perhaps not one could be found; and in some cases one field would be infested, while the adjoining one would escape. The first grain worm is a maggot, the present a caterpillar; both are reddish or

orange colored, but the present one much darker than the former, and it is also longer. We caught a quantity of the worm a few years since and enclosed them in a vial covered with muslin, and put in with them some carefully selected wheat. They fed on this wheat, gnawing the grains, and usually from the germinating end. All died before winter, without passing into the chrysalis state. We have never been able to ascertain positively the parent of this grain worm; but we have frequently found on the ears of wheat, about the time of its blossoming, a fly, rather larger than the common house fly, slender, clear wings and changeable color, green and yellow, with an ovipositor not retractile, but folding under the belly. This we think is the insect that does the mischief, as we have always found where these are most common, the worm is most abundant. All are aware, that in dried fruits, particularly the raspberry, similar worms or caterpillars, are sometimes found. • Examining some fresh fruit one day, we found a fly of the kind described, depositing its eggs on several of the berries, and these in a short time hatched and became the same yellow brown worms, with six pair of legs, three pair at each extremity, that infest wheat—at least we could perceive no material difference. There can be little doubt that there are several kinds of flies that at times deposit their eggs in grain; but scientific observers alone are competent to establish and describe the differences. The necessity for this will appear from the fact that these two grain worms and the weevil of the south were considered for a long time as the same: while the parent of the weevil is a beetle, and while the grain worms both have a fly for a parent, one of these worms is a footless grub or maggot, while the other is a caterpillar with twelve legs, moving like an inch-worm or surveyor, and suspending himself when disturbed by a silken thread. This kind of worm we have frequently seen among oats, before and after threshing, and once or twice this or a very similar one in heads of ripened clover. In the latter case it is possible they may have been derived from wheat, as a large quantity unthreshed was in the same barn.

Several years since, we put between three and four hundred shocks of wheat in our barn, but as the weather had been unfavorable, we felt some anxiety about its safety, and occasionally examined the grain: in the course of a fortnight it was found to be heating badly, and the threshing machine was immediately put in operation. After threshing, it was spread in the chaff over two large floors, and stirred daily to air and dry it. In two or three days after threshing, the sides of the floors, the threshing machine, fanning mill, and the flooring over head, were covered and blackened by a small fly, much resembling the Hessian fly in size, but not so long legged, and evidently a different insect. That they were derived from the wheat there could be no doubt, as the chaff

and grain was full of them. They all disappeared in a few days, and we have never seen such an instance since. It was before the alarm from the grain-worm, or they would have attracted more notice. Certain it is they could not have injured the wheat in which they were found materially, as it was one of the best yields we have ever had, and the grain was of fine quality. That the heat of the mow had the effect of producing a premature metamorphosis is very probable; but the pupa must have been in some part of the straw or chaff, to have made the appearance of the perfect insect possible at that time. The only occurrence of this kind we have seen described, may be found in the "Cultivator," Vol. iii, page 65, in a letter from Mr. Green of Washington county, N. Y. In this case, a farmer who had a quantity of wheat much injured by what was then called the weevil, (but was the first described grain-worm,) and by heating in the mow, had it threshed: "Soon after he commenced threshing, he found himself and machine covered with an immense quantity of small flies, which could not fly, being no doubt the production of the weevil, (wheat fly,) and hatched in the fall by the heat of the mow." Were these flies the perfect insect of the larvæ that had destroyed the wheat, or were they the parent of the parasitical insects described by Dr. Harris, and Mr. Herrick as preying upon and destroying so many of the Hessian and barley flies? The subject is a curious one, and full of interest to the farmer.

Indian corn (*Zea mays*) is troubled with fewer insects in proportion to its importance and extent of culture, than almost any other grain; still there are some insects that prey upon it, and occasionally do much injury. The *cut-worm* which we have described under section 1, does much mischief at times among corn, cutting it down close to the ground in the same manner as it does cabbages, beans, &c., and the best method of abating the evil, is to hunt up and kill every grub that shows himself as a depredator. It has been asserted that a spoonful of salt spread around a hill of corn, beans or melons, at the distance of some five or six inches, is an effectual safeguard against the cut-worm, but the remedy must be applied carefully, or it would prove more dangerous than the disease. The "*Spindle-worm*," the larvæ of the *Gortyna Zeæ* (Harris) is so named from being usually found about the upper joint or in the spindle of the corn. It commits its ravages before the spindle shows itself or while it is in the leaves, and its presence is detected by the discoloration of the corn, or by the appearance of numerous round holes in the leaves that form the sheathing of the stem, and which serve as places through which the refuse food of the worm is cast. No ears can be formed on a stalk where the worm shows itself, as it destroys all before they leave their envelop. On opening the corn, the worm will be found, smooth, slightly yellow, and some black about the head: it is, when grown, of the size of a middling goose quill. The best way to treat these insects

is to cut up the diseased stem at once, and burn or otherwise destroy it, or it may pass from the stem to the earth, and in safety undergo its transformation. Rice and corn are in the Southern States attacked by a beetle, the *Calandra oryzae*, much resembling the wheat weevil, except that it has two red spots on each wing cover and is rather smaller. We have frequently seen southern corn seemingly alive with them; and from the fact that some ears of corn sent to us from Carolina, were found to contain a weevil in nearly every kernel, which escaped from them after the reception of the corn, it would seem probable that the southern opinion, that the egg is deposited in the rice or corn, while soft and in the field, is not altogether without foundation. Fortunately for northern grain, this weevil does not seem formed for existence in such a climate as ours, and like the true wheat curculio or weevil, never is injurious in our fields or our granaries.

Barley is subject to the attacks of a nondescript insect, undoubtedly akin to the wheat flies, though from its mode of depositing its eggs, it would not seem to be identical with them. The insect is a small worm, and is found within the stalk, generally near the second joint. The effect of the worm becomes visible when the plant is some ten inches high, it becoming stunted and yellow, and the stalk discolored and full of hard protuberances containing the insect. The best descriptions of this insect may be found in the New-England Farmer, Volumes, 8, 9, 10. It is supposed these insects were imported in a cargo of barley from Bremen, which was sold and sown in several towns in the eastern part of Massachusetts in 1825. Happily the fears then entertained of their spread have not been realized, and in the greatest barley district of the United States, (the central counties of New-York,) it is entirely unknown. We have seen one or two instances of worms in the ear of barley, different from the wheat worm in appearance. We have observed on barley a small light yellow midge or fly, with a retractive ovipositor, resembling in some respects the parent fly of the wheat maggot, and not so large as that of the wheat caterpillar. It is possible the worm observed may be the progeny of this fly; but until more extensive mischief is produced, we may expect the barley worms will excite little attention.

Meadows are sometimes much damaged by the larvæ of the May bug, *Melolontha vulgaris*. This grub, which is of a dirty white color with reddish head, is, before passing into the pupa state, about one and a half inches long, and passes three or four years in this state, feeding on the roots of plants during the summer, and passing the winter deeper in the earth in a state of torpidity. The perfect insect emerges in the night, lives a few days, propagates its species and dies. We have seen many yards square of old meadow in a dry season, with the roots so completely severed by this worm, that the turf might be rolled up like a carpet; and where hogs are observed to be very fond of rooting in upland

meadows, the presence of this grub may be suspected. The grub will feed on almost any cultivated plant, to the roots of which it has access, and frequently injures wheat and other grain in this way. The grub is rarely troublesome on farms where a rotation of crops is pursued, and this points out the best method for exterminating them. Ploughing is the true remedy for the grub; but, where this is inconvenient, and they become formidable in number, recourse has been had to kindling bright fires on the evening when the beetle appears in the spring or early summer, as they are strongly attracted by light, and in this way great multitudes perish.

All root crops cultivated in the field, are more or less subject to the attacks of insects. Thus the potato has no less than six or seven beetles that feed on its leaves, but rarely appear in such numbers as to produce serious mischief. Of these, the most common are the Black Cantharis, *Cantharis atrata*, the *Cantharis cinerea*, or Ash-colored Cantharis; and the *Cantharis vittata*, or the Potato Fly, as it is frequently called. The black cantharis is sometimes so abundant as to render the taking of it for sale to the apothecaries as a blistering fly, profitable. By shaking the vines over a broad tin pan they are easily captured, when they must be emptied into a covered pail to prevent their escape. They are killed by throwing them into scalding water for two minutes, when they are spread on millinent or paper to dry, and are then ready for medical purposes. When the ash-colored cantharis is rubbed, it appears black, but they are not considered as valuable as the former kind.

The *cariot*, in field culture, is liable to be attacked by a worm called by some the parsley worm, from its preferring that plant to most others. They are known by their thrusting forth from the first segment of the body a pair of soft yellow horns, united at the bottom like the letter Y, and exhaling a powerful disagreeable odor. This is done only when they are disturbed, and appears intended as a means of defence. This larvæ is the progeny of the butterfly, *Papilio asterias*, one of the finest of our butterflies. All caterpillars are best destroyed by picking and killing them by hand, when scattered, or gathering them and crushing, when collected in masses. The same rule applies to the worms and plant lice that sometimes appear in such numbers on field turnips. A few hours attention daily to a field crop, may not only preserve that, but by preventing the transformation, and the formation of the perfect insect, avoid much labor and loss from them hereafter.

[To be Continued.]

Judge dairy cows more by the quantity of cream than of the milk they produce; milk is always thinner soon after calving, afterwards it gradually becomes thicker.

Guinea fowls are a preservative against hawks with poultry; and they lay more eggs than hens.

IMPROVEMENT IN SOUTH-CAROLINA.

Extract from an Address, delivered by Judge J. B. O'NEAL, before the South-Carolina State Agricultural Society.

Look calmly on the things around you. Your cotton is becoming annually a less valuable crop. Something in the cotton growing country must in part supply its place. May not economy stand us in great stead in this point of view? And will not the cultivation of provision crops, for which the rice-growing country and the towns of the sea-board will furnish a ready market, further eke out our wants? I have not a doubt, if all of South-Carolina above the first falls in our great rivers, would become essentially a farming and manufacturing country, we might, in a few years, vie with even New England. To accomplish this, it is necessary that the whole resources of our State should be understood, as well as her industry properly applied. The Geological and Agricultural Survey has in part, and will, I hope, fully develop them. All the region of country covered by York, Spartanburg, Union, Laurens, Greenville, Pickens, Anderson and the upper part of Abbeville, might be essentially improved by the lime which can be obtained from the immense quarries of lime-stone to be found in York, Spartanburg and Laurens. To the farmers of the beautiful section of Carolina to which allusion has been made, the lime will afford incalculable riches, when its application to soils and crops comes to be properly understood. Through the Agricultural Survey, and the Agricultural Societies, this information will be obtained and disseminated. My belief is, that in the section of country to which I have alluded, the lime-stone existing within it, is more than enough to restore its original fertility, and probably to increase it tenfold. To you, then, brother farmers of the Mountain Districts of South Carolina, there seems to be no ordinary stimulant to excite your industry and direct your efforts to improvement. The earth points to her own bosom, and tells you from it to obtain that which will clothe your fields with abundance, and fill your coffers with a more certain wealth than the mines of Mexico or Peru

NEW SYSTEM OF MANURING.

A singular idea has just been suggested in Scotland in relation to the nutrition of plants. It may be summed up in a few words, thus: that a sufficient quantity of the elements of nutrition may be absorbed in the seed of wheat, oats, barley, &c., to ensure a very large product at harvest, without any other manure. Experiments have been made with complete success, and they have been published by the Agricultural Society of Scotland. Sulphate of Ammonia has been used, and nitrate of soda and potash, and all in combination.

[*Albany Cultivator.*]

COAL TAR AND LIME AS MANURE.

Mr. Webster, of Ipswich, recommends the employment of coal tar and slaked lime as manure. The following are the proportions: Take one gallon of coal tar, and mix it up well and completely with one bushel of slaked lime; this mixture produces a material of warmth and value as a manure, rich and stimulating, and tending very much to keep away flies when sprinkled freely in among young turnips. He also recommends the use of animal tar, or dippel oil, procured from the distillation of bones, which, when mixed with slaked lime as above, forms a much richer and more serviceable manure than that of the coal tar. [*Trans. Soc. of Arts.*]

The coal and animal tars here referred to, are fluid bodies, insoluble in water, and if used in an unchanged state would prove injurious to plants, by closing the pores of their roots.

Slaked lime combines with these substances, destroys their fluid nature, and thus gives rise to the formation of solid, insoluble, crumbly compounds of lime and tar, resembling mould in mechanical properties. Through the action of slow combustion, these compounds become converted into water and gaseous bodies, and thus serve as food to plants.

F. M. B.

[*N. Y. Farmer and Mechanic.*]

NIGHT SOIL.

Our farmers might add materially to their supply of manure, by constructing their privies so as to enable them to make use of their contents. A gentleman from Connecticut informs us that he mixed his night soil with muck, adding a small quantity of lime and ashes, and made manure enough for five acres, which he planted to corn, and that the crop is equal, if not superior, to any one he has seen.

[*Albany Cultivator.*]

MATERIALS FOR COMPOSTS.

Stable manure, dry charcoal dust, soot, bone dust, oleaginous charcoal, decayed leaves, leached ashes, unleached ashes, guano, sal soda, nitrate of potash, fine salt, poudrette, horn shavings, refuse sugar, ammoniacal liquor, blood, sulphuric acid, magnesia, plaster of Paris, plaster from walls ground, decayed grass, decayed straw, decayed weeds, fish, refuse oil. These will quadruple crops, for about five dollars per acre. Lime and charcoal are especially valuable. Lime is good for the rust in the goosebury, and for all fruit trees' diseases.

[*American Agriculturist.*]

A white native strawberry has been discovered by a Mr. Goodwin, of Ashfield, Massachusetts, on the Berkshire Hills. It is of fair size, and of fine flavor,—color, yellowish white.

[*The Western Farmer.*]

GREEN MANURES.

Indian corn sowed broad cast is considered by some the best kind of vegetable growth for turning in. Apply lime, if desired, the fall before. Sow the corn early in the spring, three or four bushels to the acre, and when high enough for a deep working plough, turn it under and immediately sow another crop in the same way, turning that under as before, run crossways. It is believed that in this way four times as much improvement will be effected in one season, as by clover in three or four years.

[*Albany Cultivator.*]

BEAUTIFUL EXPERIMENT WITH A PLANT.

The Brooklyn News gives the following interesting bit of information:—"Cut a small branch of Oleander from a thrifty plant, place it in a vial partly filled with rain water, so that the lower end of the branch may be immersed about half an inch of water.—Place this in the sun in an open room, and in about fifteen or twenty days, small roots will shoot out from the end of the branch, presenting a beautiful appearance. After these roots have extended to three inches, the branch may be set out in moist earth, and if frequently watered, it will grow rapidly and soon form a large thrifty stock. Ladies who are fond of flowers, may easily propagate Oleanders in this manner, and in a very few months multiply these beautiful plants to an indefinite extent.

PAPER FROM MAULTICAULIS.

Dr. Stebbins, Chairman of the National Convention of Silk-Growers held last fall, stated that he had had several reams of paper manufactured from the leaves of the multicaulis, which satisfied him, that with some improvements, an excellent article could be made. He had on hand a ton of leaves ready for the manufacturer, and would write the result of his experiments on multicaulis paper.

He further adverted to the matter of obtaining silk for coarse goods from the inside bark of the mulberry. Yankee ingenuity will yet extract wealth from these rude hints. It is certainly worth making the experiment.

[*Western Farmer.*]

DISEASED POTATOES.

Mr. H. M. Paine, of the optical works at Oxford, Mass., has applied a glass that magnifies 9,000 times to the diseased parts of the potatoes, and finds them filled with animalculæ with bodies like the soldier-ant, and legs like the hairy garden spider. He thinks there is no epidemic among potatoes, but that the disease is caused by these insects.

[*N. Y. Farmer and Mechanic.*]

PRUNING.

The experience of several persons seems to prove very conclusively, that the close artificial pruning and dressing of the choice wine grape vines, is, in this climate, not only unnecessary, but undesirable, as larger crops are produced by a medium being followed between long and short pruning. By allowing vines to run up into the pruned heart of any other tree, the fruit is often protected by the foliage of the tree from late frosts in May, and the vines will thus produce plentifully large bunches.

[*Western Farmer.*]

QUANTITY OF LIVE STOCK IMPORTED.

The following shows the number of horses and mules, hogs, black cattle and sheep, that passed over the Paint Mountain, in North Carolina, for the South-Carolina and Georgia markets.

	Horses and Mules.	Hogs.	Black Cattle.	Sheep.
In 1840	5181	52,255	3243	3245
" 1841	5833	54,786	3049	2357
" 1842	3840	62,649	3318	3192
" 1843	4361	52,612	3333	3565
	<hr/>	<hr/>	<hr/>	<hr/>
	19,215	222,302	12,943	12,359
" 1844 to } Aug. 31 }	2090	4702	2656	2101
	<hr/>	<hr/>	<hr/>	<hr/>
	21,305	227,004	15,599	14,460

The above was obtained from R. W. Brank, keeper of the Toll Gate, on the French Broad River, in North Carolina.

[*The Carolina Planter.*]

THE FALL SEASON.

This fall has closed beautifully, bringing everything in the vegetable kingdom to full maturity. The Sea-Island crop is a good one. The orange trees have borne well, and present a healthy and handsome appearance. We are presented from Beaufort, with a magnificent Pomegranate. We gathered on Edisto, three days ago, several branches of full grown Olives—from a tree loaded with the ripe fruit—and though we have had frost, the daily Roses around it were in full and fresh blossoms. There are indications enough though of old winter's coming—wild geese wending South in large flocks—Robins appearing on the Sea-Islands—and several straggling Woodcocks. The pigs too are marching into winter quarters with wisps of straw on their snouts.

[*Charleston Mercury, Nov. 9th.*]

The gardens around Charleston have produced an uncommonly fine yield of oranges, lemons, green peas, and Indian corn this season. And even at the time of closing this Number, (Nov. 30) the season is as mild as May.—*Ed.*

INDEX TO VOL. FOR 1844.

	PAGE.		PAGE.
A.		B.	
Address, by J. S. Brisbane Esq., before the St. Andrew's, Ashley and Stono Agricultural Associa- tion, - - -	252	Allston's, Col. R. F. W. Report on planting and preparing Rice, - -	6
Address, by Judge J. B. O'Neill, extract from an, - - -	469	Analysis of cotton-wool, cotton-seed, Indian corn, and the yam potato, by Prof. C. U. She- pard, - - -	230
Agricultural Society, State, Proceed- ings of the - - -	27	" of rice, rice-straw, chaff, &c.,	255
" Society, State, Proceed- ings at Greenville, - -	387	Apple without seed or core, - -	318
" Chemistry, lectures on, by J. Lawrence Smith, M. D. - - -	34	C.	
" Societies in South-Caro- lina, - - -	40	Barnyards, location of, - - -	159
" Society of St. Luke's, Re- port of a committee of the	41	Bathing, efficacy of, - - -	240
" Society of St. Luke's, -	320	Bear & Gouilart's Patent, of Jauffret's method of making manure, - -	100
" Society of Black Oak, 43,	227	Beet, sugar, cultivation of the,	331, 433
" Report, (Supplemental) by E. Ruffin, - - -	122	Blue-wash, receipt to make, - -	440
" Proceedings of the St. Andrew's, Ashley and Stono Agricultural Asso- ciation, - - -	209	Boomer's method of making manure, recommended, by R. E. Russel, - - -	38
" Society of St. Paul's, Re- port on Cotton and Provi- sion crop, - - -	313	" Patent, Hon. Mr. Elsworth's letter on, - - -	93
" Produce of Alabama, -	156	Bucens, cure for, - - -	358
" Address, by John L. Hunter, Esq., before the Barbour County Agricul- tural Society, Alabama,	176	Butter, new way to make, - -	400
" Society of South-Carolina, Proceedings of the, -	347	D.	
" Society of St. John's Colleton, Report of the Inspecting Committee of,	405	Cabbage, new kind of, - - -	439
" Society of St. Andrew's, Report on the Introduc- tion of Sea-Island Cotton into the Chinese markets,	409	Cattle diseases and foul pastures, 89,	132
" Products of the United States, - - -	279	" Doctor, every man his own, by Wm. Youatt, - - -	273
		" Fall fodder for, - - -	360
		Charcoal, - - -	78
		Chicken-hatching machine, -	240
		Clay soils, improvement of, -	236
		Corn, new variety of, called calico corn, - - -	63
		" sowing Indian, broad-cast, -	65
		" stalk sugar, by Wm. Webb, -	95
		" soaking, in Muriate of Am- monia, - - -	156
		" stalk fodder, cutting of, -	189
		" Indian. Report of a Committee of the South-Carolina Agricul- tural Society, on, - - -	273
		" cobs, for stock, - - -	275

	PAGE.		PAGE.
Corn-stalk sugar, experiments in the manufacture of, by Marcus Adams, - - -	333	Fruit Trees, how to make an unproductive, bear, - - -	76
" Ellsworth's Report on, - - -	345	" wash for, - - -	190
Cotton, Sea-Island, against packing in square bales, - - -	41	" new mode of propagating, - - -	240
" Santee, long crop, - - -	43	" seasons for trimming, - - -	277
" improved culture of, No. III, by N. B. Cloud, M. D. - - -	57	" Fall transplanting of, - - -	360
" the growing of, by a Ploughman, - - -	59	Fruit, Statistics of, - - -	276
" Gin, description of a new and improved, - - -	105		
" Gin, and introduction of cotton, answers to queries of the Hon. W. B. Seabrook, by Thos. Spalding, of Geo. - - -	106, 123	G.	
" black and green seed, introduced into South Carolina, in a letter by K. Burden, - - -	162, 201	Gardening Memoranda, - - -	78
" plant, the, its nature, - - -	114	Gaylord, Willis, death of, - - -	160
" topping, &c., - - -	152	Gin-band, cheap, - - -	280
" Gin, M'Carthy's, described by W. B. Seabrook, and Wm. Duncan, - - -	183	Grafting Vines, - - -	72
" ginned by it, examined by H. Houldsworth, - - -	185	Grapes, culture and use of, recommended, - - -	237
" Gin, introduction of the, - - -	201	Grape Vines, how to prevent from bleeding, - - -	191
" " inquiry of the, - - -	237	Guano, - - -	357
" Rust in, - - -	337	Guano, its effects, described, - - -	227
" crop of the Union, - - -	262	" Scotch, - - -	240
" Sea-Island, grown in Florida, - - -	449	" Ships employed in trade of - - -	400
Composts, materials for, - - -	470	" Prices of, in England, - - -	436
Cows dropping after calving, - - -	193	" method of testing, - - -	437
Cream from milk, new method of obtaining, - - -	278		
Cucumber, culture of the, - - -	190	H.	
Curculio, the, by B. A. Fahnestock, - - -	150	Hamilton, Gen. James, Address on the Agriculture and Husbandry of the South, - - -	302
Cuttings for grafting, how to preserve, - - -	191	Hammond, Gov. J. H., on Marling, - - -	36
		Hay, salt on, - - -	360
D.		Hebridizing, - - -	377
Draining, on; by H. H. - - -	441	Hint, a, to farmers, - - -	439
Drought, protection against - - -	238	Hogs, fat, - - -	120
Duck Plant, the, - - -	374	Hollow Horn, remedy for, - - -	194
		Honey, purified, - - -	77
E.		Horn Distemper, or Hollow Horn, - - -	399
Errata, in Ruffin's Agricultural Survey, - - -	80	Horse, nose bags, - - -	859
Experiments, - - -	236	Horses, cure for sick, - - -	157
" interesting scientific, - - -	319	" eye, to take the film from a, - - -	323
" beautiful, with a plant, - - -	471	Hoven in Cattle, remedy for, - - -	360
		Hussey's Corn and Cob Grinder, - - -	65
F.			
Fences—Stock—Manure; by Holkham, - - -	423	I.	
Florida, its Climate, Soil, Productions &c., - - -	444	Importations—Business, - - -	197
" Sea Island cotton grown in, - - -	449	Indian Corn, as green manures, - - -	471
		Indian Pea, and other manuring crops, remarks on; by E. Ruffin, Esq., - - -	31
		Indigo, preparation of, for market, - - -	186
		Insects, destruction of, by artificial means, - - -	116
		" which attack the Turnip, - - -	355
		" injurious to the Farmer and Gardener; by Willis Gaylord, - - -	381, 421, 461
		Introductory Remarks, - - -	1

	PAGE.		PAGE.
L.		L.	
Leibig's remarks on De Saussure's Experiments, - -	265, 321	Planters and Overseers, - -	350
M.		Planters' Clubs, with a Constitution, -	401
Manures, applying to the surface, -	102	Plants, food of—its mode of preparation, - - -	367
“ on making and applying, -	281	Plank Roads, durability and expense of, - - -	192
“ Coal Tar and Lime, as a	470	Ploughing and Subsoiling, by Jas. F. W. Johnston, M. A., F. R. S., -	2
Manuring with loam and clay, in a roasted state, - -	437	Ploughing subsoil, on; by C. G. Page, -	439
“ new system of, - -	469	Plum Trees, Lime for preserving, -	198
Marl as a manure, a short notice of the use of, by Dr. J. L. Smith, -	394	Poultry, the value of, - - -	280
“ underlying Charleston, upon the nature of the, - - -	398	Poinsett's, J. R., Discourse before the Greenville Agricultural Society, -	452
Marls, cautions to planters, respecting, by Prof. C. U. Shepard, -	143	Potatoes, diseases in, - - -	71
“ experiments with, - -	353	“ experiment with, - - -	120
Marling, successful, - - -	354	“ galvanic experiments on, -	438
“ particulars of the experiment, of; by J. A. Ram-ay, Esq., -	393	“ diseased, - - -	471
Milk, green corn-stalks make rich -	76	Poudret, - - -	103
Mousseline de Laines, - - -	196	Port-Wine, - - -	230
Multicole Rye, - - -	157	Premiums on Horses, by the State Agricultural Society, -	34
Muskmelon and other seeds, introduced from Asia; by J. B. Adger; with directions for planting, -	60	“ on Mules, - - -	35
N.		“ on Cattle, - - -	ib.
New-York Agricultural Institute, -	372	“ on Sheep, - - -	ib.
Night-soil, - - -	400, 470	“ on Hogs, - - -	ib.
O.		“ for best experiments in Agriculture, - - -	158
Oats for Colts, poisonous, - -	159	“ of the Black Oak Agricultural Society, - -	229
Oak, the—curious experiment, -	195	Proceedings of the State Agr. Society, -	27
Officers of State Agricultural Society, -	39	“ of the Black Oak do, -	227
“ Agricultural Society of S. C. -	347	R.	
“ the St. Luke's Agr. Society, -	320	Rats, to get rid of, - - -	440
Onions, - - -	280	Rice, varieties of, in S. Carolina, -	6
Oranges, - - -	460	“ early introduction and culture, -	9
Orchards, ploughing, - - -	313	“ product of, in the U. States, -	11
Overseers, by Franklin, - 267, 316, 324		“ preparation of, - - -	13
P.		“ dry culture and water cover, -	13
Paper, from Multicaulis leaves, -	471	“ water culture, or sixty days system, - - -	15
Patent Office, products & population, -	230	“ value of the crop, - - -	16
Peach Trees, management of, - 77, 239		“ drill ploughing, in planting, -	17
“ Tobacco around - - -	190	“ Threshing Mills, for, - - -	18
“ decay of, - - -	438	“ process of preparing, - - -	22
Peas, earliest varieties of, - -	146	“ large grain, by Joshua J. Ward, Esq., - - -	31
“ Green, how to destroy the worm in, - - -	338	“ cultivation of, by Edward T. Heriot, Esq., - - -	32
Pent-Ashes, for trees, - - -	193	Roper, R. W., Report on exports and imports, - - -	343
Pindars, culture of, - - -	93	Rotation of crops, - - -	435
		Rullin's, Edmund, premium for experiments on marl and lime, -	26
		“ opinion and experience on the utility of marling on worn out lands, -	45

	PAGE.		PAGE.
Ruffin's Report of the Agricultural Survey of South-Carolina, Note and Errata to,	79	Starch, cold, for linen, -	440
" Report, observations on, 111, 166, 213, 241		Strawberries, -	119
" Supplemental Report to Gov. Hammond, -	122	Steers, fattening of, by J. M. C. Valk,	272
" Survey, extracts from it, 136, 169, 220, 246, 286		Stock, live, quantity brought into So. Carolina and Georgia, -	472
Russian Sugar turnips, -	79	" raising and breaking Oxen, -	68
S.		Subsoil Ploughing, results of, 103, 145	
Sage Tea, a remedy for Botts, -	160	Subsoil Plough, by Ruggles, Nourse & Mason, -	104
Salt, benefits of, as a manure, -	144	Sugar Plantations, -	160
Santee Long Cotton Crop, -	43	Sulphate of Ammonia, Sulphate of Soda, and Nitrate of Soda, -	356
Saussure's Experiments, -	262	Swine, management, of -	70
" proofs of assimilation of absorbed humus, -	321	Swiney, cure for, -	194
Season, the Fall, its close, -	47	T.	
Sea-mud, fertility of, -	97	Tea, growing in North-Carolina, -	63
Sea-Island Cotton, against packing in square bales, -	41	Things to be Done, -	118
Sea-weed as a Manure, -	328	Tobacco, crop of, and exports of, -	364
Shepard's Analysis of Cotton-wool, Cotton-seed, &c. -	230	Tucker, J. H. Esq., report on Indian Corn, -	275
" Analysis of Rice, Rice-straw, &c. -	255	Tuomey appointed Geological Surveyor of the State, -	50
Sheep, new food for, -	71	Turkies, fattening, -	320
Silk, by Miss Fleming of Spartanburg, 27		Turkey Tobacco, -	154
" Culture, -	74	V.	
Sirup from Corn-stalks, by J. S. Pope, 432		Vines preserved from worms and bugs, -	76
Soil, effects of deepening the, -	195	Vinegar in the sugar beet, -	434
" Table of, -	436	W.	
South-Carolina, cursory view of the state of Agriculture in, -	236	Water Power vs. Steam, -	197
South-Carolina, observations addressed to Planters in, by R. W. Roper, 329		Water-finders, -	359
South-Carolina Exports and Imports, 348		" stagnant, -	370
Squirrels, emasculated, -	430	Wheat, valuable, -	319
Stables, air of, -	79	Wool, export of, -	400
Stagnant Water, -	370	Worm in Green Pea, -	285
		" how to destroy the, -	338

